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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,315	02/06/2004	Jae-Dong Yoon	0630-1953P	6483

2292 7590 11/29/2007
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EXAMINER	
EWALD, MARIA VERONICA	

ART UNIT	PAPER NUMBER
1791	

NOTIFICATION DATE	DELIVERY MODE
11/29/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/772,315	YOON ET AL.	
	Examiner	Art Unit	
	Maria Veronica D. Ewald	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15 and 23-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15 and 23-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

13. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 7, 2007 has been entered.

Allowable Subject Matter

14. The indicated allowability of claim 23 is withdrawn in view of the newly discovered reference(s) to Littleton, et al. (U.S. 6,179,605). Rejection(s) based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 23 is rejected under 35 U.S.C. 102(b) as being anticipated by Littleton, et al. (U.S. 6,179,605). Littleton, et al. teach a molding system comprising: a cylinder

having an inlet and an outlet (item 43 - figure 1); a screw installed inside the cylinder and making a mold material and a mixture including a plastic introduced into the inlet of the cylinder flow toward the outlet (figure 1); a heater for heating the mold material and mixture introduced in the cylinder (column 7, lines 10 – 20); a fixed mold having a passage for injecting a fluid therethrough and an internal space (item 21 – figure 3; column 5, lines 37 – 40); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (item 22 – figure 3; column 5, lines 39 – 40); a same flow accelerating material means provided on the inner walls of both the fixed mold and movable mold that form the molding space for accelerating flow of the fluid injected into the injection mold (column 5, lines 45 – 50); and further comprising an inner wall passage provided with the same flow accelerating material means (item 39 – figure 7; column 7, lines 1 – 5).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 – 6, 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bodkins, et al. (U.S. 3,544,518) in view of Ouellette (U.S. 6,419,476). Bodkins, et al. teach an injection mold comprising: a fixed mold having a passage for injecting a fluid therethrough and an internal space (figure 1; column 2, lines 55 – 60); a

movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (figure 1; column 2, lines 55 – 60); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for increasing insulation of the fluid and reducing a flow resistance between the inner walls and the fluid so as to accelerate flow of the fluid injected into the injection mold (items 3 and 3' – figure 1; column 2, lines 57 – 62); wherein the same flow accelerating material means is a solid coating material (column 3, lines 45 – 63); wherein the solid coating material is a polymer coating material (column 3, lines 50 – 53); wherein the polymer used for the polymer coating material is PEEK (poly ether ether ketone) (column 3, lines 50 – 53); wherein the polymer coating material is one of PTFE (polytetrafluoroethylene), PE (polyethylene), and methacrylates (column 3, lines 50 – 53); wherein the solid coating material is a ceramic coating material (column 3, lines 57 – 59). In addition, the reference teaches that the same flow accelerating material means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid, and wherein the solid coating material is at least one of PE (Polyethylene) and a methacrylate (column 3, lines 50 – 55); and wherein the same flow accelerating material means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid, and wherein the solid coating material is at least one of PEEK (Poly Ether Ether Ketone), PE (Polyethylene) and a methacrylate (column 3, lines 50 – 55).

However, Bodkins, et al. is silent with respect to any teaching of the same flow accelerating material means provided on the inner walls of the passage.

In a method to fabricate articles via injection molding, Ouellette teaches an improved injection molding apparatus with a runnerless manifold. The manifold is constructed of a low thermal conductive material, providing adequate insulation of the resin being injected (column 4, lines 60 – 65), thereby ensuring that the resin remains at a reasonable uncured molding temperature during one injection molding cycle (column 4, lines 65 – 67). The manifold is comprised of polymer bars (items 116 and 118 – figure 7) which is constructed of a high temperature polymer material having low thermal conductivity, high strength and rigidity (column 7, lines 61 – 65). The use of such material ensures that the resin material will not either cure prematurely or that the thermoplastic will not solidify while in residence in the manifold (column 8, lines 35 – 45). As an alternative embodiment to the polymer bars, the flow channels may be constructed of a laminate of one or more polymeric materials (column 8, lines 45 – 60). Any resulting combination of laminates, again, ensures that the resin or thermoplastic is prevented from premature solidification.

Thus, because both Bodkins, et al. and Ouellette teach the use of injection molding apparatus and the importance of insulating both the mold(s) and the manifolds, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Bodkins, et al. such that the manifold or mold passage is coated with the same flow accelerating material means for the purpose

of ensuring that the resin or thermoplastic does not prematurely solidify while in residence in the manifold.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bodkins et al. in view of Ouellette. Bodkins, et al. teach an injection mold comprising: a fixed mold having a passage for introducing a fluid therethrough and an internal space (column 1, lines 28 – 30); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (figure 1; column 2, lines 55 – 60); and a flow accelerating means provided on an inner wall of the molding space for accelerating flow of the fluid; wherein the flow accelerating means is a solid coating for increasing insulation of the fluid and reducing a flow resistance between the inner wall and the fluid so as to accelerate flow of the fluid and wherein the solid coating material is a solid lubricant (items 3 and 3' – figure 1; column 2, lines 57 – 62).

However, Bodkins, et al. is silent with respect to any teaching of the same flow accelerating material means provided on the inner walls of the passage.

In a method to fabricate articles via injection molding, Ouellette teaches an improved injection molding apparatus with a runnerless manifold. The manifold is constructed of a low thermal conductive material, providing adequate insulation of the resin being injected (column 4, lines 60 – 65), thereby ensuring that the resin remains at a reasonable uncured molding temperature during one injection molding cycle (column 4, lines 65 – 67). The manifold is comprised of polymer bars (items 116 and 118 – figure

7) which is constructed of a high temperature polymer material having low thermal conductivity, high strength and rigidity (column 7, lines 61 – 65). The use of such material ensures that the resin material will not either cure prematurely or that the thermoplastic will not solidify while in residence in the manifold (column 8, lines 35 – 45). As an alternative embodiment to the polymer bars, the flow channels may be constructed of a laminate of one or more polymeric materials (column 8, lines 45 – 60). Any resulting combination of laminates, again, ensures that the resin or thermoplastic is prevented from premature solidification.

Thus, because both Bodkins, et al. and Ouellette teach the use of injection molding apparatus and the importance of insulating both the mold(s) and the manifolds, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Bodkins, et al. such that the manifold or mold passage is coated with the same flow accelerating material means for the purpose of ensuring that the resin or thermoplastic does not prematurely solidify while in residence in the manifold.

Claims 12 – 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bodkins, et al. in view of Ouellette. Bodkins, et al. teach a molding system comprising: a cylinder having an inlet and an outlet; a screw installed inside the cylinder and making a mold material and a mixture including a plastic introduced into the inlet of the cylinder flow toward the outlet; a heater for heating the mold material and mixture introduced in the cylinder (column 4, lines 35 – 45); a fixed mold having a passage for injecting a fluid

therethrough and an internal space (figure 1); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (figure 1); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for increasing insulation of the fluid and reducing a flow resistance of the fluid (column 2, lines 57 – 62) so as to accelerate flow of the fluid injected into the injection mold (items 3 and 3' – figure 1; column 2, lines 57 – 62); wherein a foaming agent supplier is provided at the side of the inlet of the cylinder to supply a foaming agent into the cylinder (column 4, lines 25 – 35); wherein a gas supplier is provided at the side of the inlet of the cylinder to supply a gas into the cylinder (column 4, lines 25 – 35); and wherein the flow accelerating means is a solid coating material.

However, Bodkins, et al. is silent with respect to any teaching of the same flow accelerating material means provided on the inner walls of the passage.

In a method to fabricate articles via injection molding, Ouellette teaches an improved injection molding apparatus with a runnerless manifold. The manifold is constructed of a low thermal conductive material, providing adequate insulation of the resin being injected (column 4, lines 60 – 65), thereby ensuring that the resin remains at a reasonable uncured molding temperature during one injection molding cycle (column 4, lines 65 – 67). The manifold is comprised of polymer bars (items 116 and 118 – figure 7) which is constructed of a high temperature polymer material having low thermal conductivity, high strength and rigidity (column 7, lines 61 – 65). The use of such material ensures that the resin material will not either cure prematurely or that the

thermoplastic will not solidify while in residence in the manifold (column 8, lines 35 – 45). As an alternative embodiment to the polymer bars, the flow channels may be constructed of a laminate of one or more polymeric materials (column 8, lines 45 – 60). Any resulting combination of laminates, again, ensures that the resin or thermoplastic is prevented from premature solidification.

Thus, because both Bodkins, et al. and Ouellette teach the use of injection molding apparatus and the importance of insulating both the mold(s) and the manifolds, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Bodkins, et al. such that the manifold or mold passage is coated with the same flow accelerating material means for the purpose of ensuring that the resin or thermoplastic does not prematurely solidify while in residence in the manifold.

Claims 1 – 7 and 24 – 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yotsutsuji, et al. (U.S. 4,225,109) in view of Ouellette. Yotsutsuji, et al. teach an injection mold comprising: a fixed mold having a passage for injecting a fluid therethrough and an internal space (item 1 – figure 1; column 3, lines 50 – 51; column 4, lines 35 – 36); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (item 1' – figure 1; column 4, lines 30 – 33); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for increasing insulation of the fluid and reducing a flow resistance

between the inner walls and the fluid so as to accelerate flow of the fluid injected into the injection mold (item 13 and 13' – figure 1; column 2, lines 45 – 60; column 4, lines 1 – 5, 30 – 35); wherein the same flow accelerating material means is a solid coating material (column 2, lines 45 – 60); wherein the solid coating material is a polymer coating material (column 4, lines 22 – 26); wherein the polymer used for the polymer coating material is PEEK (poly ether ether ketone) (column 4, lines 22 – 26); wherein the polymer coating material is one of PTFE (polytetrafluoroethylene), PE (polyethylene), and methacrylates (column 4, lines 22 – 26). The reference further teaches that the solid coating material is a ceramic coating material (column 4, lines 10 – 15); wherein the ceramic coating material is one of aluminum oxide and zirconium oxide (column 4, lines 15 – 19). In addition, the reference teaches that the same flow accelerating material means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid, and wherein the solid coating material is at least one of PE (Polyethylene) and a methacrylate (column 3, lines 50 – 55); and wherein the same flow accelerating material means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid, and wherein the solid coating material is at least one of PEEK (Poly Ether Ether Ketone), PE (Polyethylene) and a methacrylate (column 3, lines 50 – 55).

Yotsutsuji, et al. however, is silent with respect to any teaching of the same flow accelerating material means provided on the inner walls of the passage.

In a method to fabricate articles via injection molding, Ouellette teaches an improved injection molding apparatus with a runnerless manifold. The manifold is

constructed of a low thermal conductive material, providing adequate insulation of the resin being injected (column 4, lines 60 – 65), thereby ensuring that the resin remains at a reasonable uncured molding temperature during one injection molding cycle (column 4, lines 65 – 67). The manifold is comprised of polymer bars (items 116 and 118 – figure 7) which is constructed of a high temperature polymer material having low thermal conductivity, high strength and rigidity (column 7, lines 61 – 65). The use of such material ensures that the resin material will not either cure prematurely or that the thermoplastic will not solidify while in residence in the manifold (column 8, lines 35 – 45). As an alternative embodiment to the polymer bars, the flow channels may be constructed of a laminate of one or more polymeric materials (column 8, lines 45 – 60). Any resulting combination of laminates, again, ensures that the resin or thermoplastic is prevented from premature solidification.

Thus, because both Yotsutsuji, et al. and Ouellette teach the use of injection molding apparatus and the importance of insulating both the mold(s) and the manifolds, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Yotsutsuji, et al. such that the manifold or mold passage is coated with the same flow accelerating material means for the purpose of ensuring that the resin or thermoplastic does not prematurely solidify while in residence in the manifold.

Claims 8 – 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yotsutsuji, et al. in view of Ouellette. Yotsutsuji, et al. teach an injection mold

comprising: a fixed mold having a passage for introducing a fluid therethrough and an internal space (item 1 – figure 1; column 3, lines 50 – 51; column 4, lines 35 – 36); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (item 1' – figure 1; column 4, lines 30 – 33); and a flow accelerating means provided on an inner wall of the molding space for accelerating flow of the fluid; wherein the flow accelerating means is a solid coating for increasing insulation of the fluid and reducing a flow resistance between the inner wall and the fluid so as to accelerate flow of the fluid and wherein the solid coating material is a solid lubricant (item 12 – figure 1; column 2, lines 45 – 60; column 3, lines 50 – 60); wherein the solid lubricant is one of graphite, molybdenum and disulfide (column 4, lines 1 – 3, 10 – 15).

Yotsutsuji, et al. however, is silent with respect to any teaching of the same flow accelerating material means provided on the inner walls of the passage.

In a method to fabricate articles via injection molding, Ouellette teaches an improved injection molding apparatus with a runnerless manifold. The manifold is constructed of a low thermal conductive material, providing adequate insulation of the resin being injected (column 4, lines 60 – 65), thereby ensuring that the resin remains at a reasonable uncured molding temperature during one injection molding cycle (column 4, lines 65 – 67). The manifold is comprised of polymer bars (items 116 and 118 – figure 7) which is constructed of a high temperature polymer material having low thermal conductivity, high strength and rigidity (column 7, lines 61 – 65). The use of such material ensures that the resin material will not either cure prematurely or that the

thermoplastic will not solidify while in residence in the manifold (column 8, lines 35 – 45). As an alternative embodiment to the polymer bars, the flow channels may be constructed of a laminate of one or more polymeric materials (column 8, lines 45 – 60). Any resulting combination of laminates, again, ensures that the resin or thermoplastic is prevented from premature solidification.

Thus, because both Yotsutsuji, et al. and Ouellette teach the use of injection molding apparatus and the importance of insulating both the mold(s) and the manifolds, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Yotsutsuji, et al. such that the manifold or mold passage is coated with the same flow accelerating material means for the purpose of ensuring that the resin or thermoplastic does not prematurely solidify while in residence in the manifold.

Claims 10 – 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yotsutsuji, et al. in view of Ouellette. Yotsutsuji, et al. teach an injection mold comprising: a fixed mold having a passage for introducing a fluid therethrough and an internal space (item 1 – figure 1; column 3, lines 50 – 51; column 4, lines 35 – 36); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (item 1' – figure 1; column 4, lines 30 – 33); and a flow accelerating means provided on an inner wall of the molding space for accelerating flow of the fluid (column 2, lines 45 – 60; column 3, lines 55 – 65); wherein the flow accelerating means is a solid coating metal material for increasing insulation of

the fluid and reducing a flow resistance between the inner wall and the fluid so as to accelerate flow of the fluid, and wherein the solid coating material is a solid metal (item 12 – figure 1; column 2, lines 45 – 60; column 3, lines 50 – 60); wherein the solid coating metal material is one of lead, indium, cadmium, tin and silver (column 3, lines 55 – 62).

Yotsutsuji, et al. however, is silent with respect to any teaching of the same flow accelerating material means provided on the inner walls of the passage.

In a method to fabricate articles via injection molding, Ouellette teaches an improved injection molding apparatus with a runnerless manifold. The manifold is constructed of a low thermal conductive material, providing adequate insulation of the resin being injected (column 4, lines 60 – 65), thereby ensuring that the resin remains at a reasonable uncured molding temperature during one injection molding cycle (column 4, lines 65 – 67). The manifold is comprised of polymer bars (items 116 and 118 – figure 7) which is constructed of a high temperature polymer material having low thermal conductivity, high strength and rigidity (column 7, lines 61 – 65). The use of such material ensures that the resin material will not either cure prematurely or that the thermoplastic will not solidify while in residence in the manifold (column 8, lines 35 – 45). As an alternative embodiment to the polymer bars, the flow channels may be constructed of a laminate of one or more polymeric materials (column 8, lines 45 – 60). Any resulting combination of laminates, again, ensures that the resin or thermoplastic is prevented from premature solidification.

Thus, because both Yotsutsuji, et al. and Ouellette teach the use of injection molding apparatus and the importance of insulating both the mold(s) and the manifolds, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Yotsutsuji, et al. such that the manifold or mold passage is coated with the same flow accelerating material means for the purpose of ensuring that the resin or thermoplastic does not prematurely solidify while in residence in the manifold.

Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yotsutsuji, et al. in view of Ouellette. Yotsutsuji, et al. teach a molding system comprising: a cylinder having an inlet and an outlet; a screw installed inside the cylinder and making a mold material and a mixture including a plastic introduced into the inlet of the cylinder flow toward the outlet; a heater for heating the mold material and mixture introduced in the cylinder (column 3, lines 45 – 50; column 4, lines 30 – 35, 45 – 55); a fixed mold having a passage for injecting a fluid therethrough and an internal space (item 1 – figure 1); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (item 1' – figure 1); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for increasing insulation o the fluid and reducing a flow resistance between the inner walls and the fluid so as to accelerate flow of the fluid injected into the injection mold (item 12 and 12' – figure 1; column 2, lines 45 – 60; column 4, lines 1 – 5, 30 – 35); wherein the flow accelerating

means is a solid coating material (item 12 and 12' – figure 1; column 2, lines 45 – 60; column 4, lines 1 – 5, 30 – 35).

Yotsutsuji, et al. however, is silent with respect to any teaching of the same flow accelerating material means provided on the inner walls of the passage.

In a method to fabricate articles via injection molding, Ouellette teaches an improved injection molding apparatus with a runnerless manifold. The manifold is constructed of a low thermal conductive material, providing adequate insulation of the resin being injected (column 4, lines 60 – 65), thereby ensuring that the resin remains at a reasonable uncured molding temperature during one injection molding cycle (column 4, lines 65 – 67). The manifold is comprised of polymer bars (items 116 and 118 – figure 7) which is constructed of a high temperature polymer material having low thermal conductivity, high strength and rigidity (column 7, lines 61 – 65). The use of such material ensures that the resin material will not either cure prematurely or that the thermoplastic will not solidify while in residence in the manifold (column 8, lines 35 – 45). As an alternative embodiment to the polymer bars, the flow channels may be constructed of a laminate of one or more polymeric materials (column 8, lines 45 – 60). Any resulting combination of laminates, again, ensures that the resin or thermoplastic is prevented from premature solidification.

Thus, because both Yotsutsuji, et al. and Ouellette teach the use of injection molding apparatus and the importance of insulating both the mold(s) and the manifolds, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Yotsutsuji, et al. such that the manifold

or mold passage is coated with the same flow accelerating material means for the purpose of ensuring that the resin or thermoplastic does not prematurely solidify while in residence in the manifold.

Claims 1 – 3, 5, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hendry (U.S. 4,201,742) in view of Ouellette. Hendry teaches a fixed mold having a passage for injecting a fluid therethrough and a internal space (item 12 – figure 1); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (item 10 – figure 1); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for accelerating flow of the fluid injected into the injection mold (column 3, lines 55 – 60); wherein the same flow accelerating material means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid (column 3, lines 55 – 60); wherein the solid coating material is a polymer coating material and wherein the polymer coating material is one of PTFE (polytetrafluoroethylene), PE (polyethylene) and methacrylates (column 3, lines 55 – 57). Furthermore, the reference teaches that the same flow accelerating material means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid, and wherein the solid coating material is at least one of PE (Polyethylene) and a methacrylate (column 3, lines 50 – 55); and wherein the same flow accelerating material means is a solid coating material for increasing insulation of the fluid and reducing a flow resistance of the fluid, and wherein the solid

coating material is at least one of PEEK (Poly Ether Ether Ketone), PE (Polyethylene) and a methacrylate (column 3, lines 50 – 55).

Hendry however, is silent with respect to any teaching of the same flow accelerating material means provided on the inner walls of the passage.

In a method to fabricate articles via injection molding, Ouellette teaches an improved injection molding apparatus with a runnerless manifold. The manifold is constructed of a low thermal conductive material, providing adequate insulation of the resin being injected (column 4, lines 60 – 65), thereby ensuring that the resin remains at a reasonable uncured molding temperature during one injection molding cycle (column 4, lines 65 – 67). The manifold is comprised of polymer bars (items 116 and 118 – figure 7) which is constructed of a high temperature polymer material having low thermal conductivity, high strength and rigidity (column 7, lines 61 – 65). The use of such material ensures that the resin material will not either cure prematurely or that the thermoplastic will not solidify while in residence in the manifold (column 8, lines 35 – 45). As an alternative embodiment to the polymer bars, the flow channels may be constructed of a laminate of one or more polymeric materials (column 8, lines 45 – 60). Any resulting combination of laminates, again, ensures that the resin or thermoplastic is prevented from premature solidification.

Thus, because both Hendry and Ouellette teach the use of injection molding apparatus and the importance of insulating both the mold(s) and the manifolds, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Hendry such that the manifold or mold passage is

coated with the same flow accelerating material means for the purpose of ensuring that the resin or thermoplastic does not prematurely solidify while in residence in the manifold.

Claims 12 – 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hendry in view of Ouellette. Hendry teaches a molding system comprising: a cylinder having an inlet and an outlet; a screw installed inside the cylinder and making a mold material and a mixture including a plastic introduced into the inlet of the cylinder flow toward the outlet; a heater for heating the mold material and mixture introduced in the cylinder (column 2, lines 65 – 68; column 6, lines 20 – 30); a fixed mold having a passage for injecting a fluid therethrough and an internal space (item 12 – figure 1); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (item 10 – figure 1); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for increasing insulation of the fluid and reducing a flow resistance of the fluid (column 3, lines 55 – 60) so as to accelerate flow of the fluid injected into the injection mold (column 3, lines 55 – 60); wherein a foaming agent supplier is provided at the side of the inlet of the cylinder to supply a foaming agent into the cylinder (column 1, lines 15 – 25); wherein a gas supplier is provided at the side of the inlet of the cylinder to supply a gas into the cylinder (column 1, lines 15 – 25); and wherein the flow accelerating means is a solid coating material.

Hendry however, is silent with respect to any teaching of the same flow accelerating material means provided on the inner walls of the passage.

In a method to fabricate articles via injection molding, Ouellette teaches an improved injection molding apparatus with a runnerless manifold. The manifold is constructed of a low thermal conductive material, providing adequate insulation of the resin being injected (column 4, lines 60 – 65), thereby ensuring that the resin remains at a reasonable uncured molding temperature during one injection molding cycle (column 4, lines 65 – 67). The manifold is comprised of polymer bars (items 116 and 118 – figure 7) which is constructed of a high temperature polymer material having low thermal conductivity, high strength and rigidity (column 7, lines 61 – 65). The use of such material ensures that the resin material will not either cure prematurely or that the thermoplastic will not solidify while in residence in the manifold (column 8, lines 35 – 45). As an alternative embodiment to the polymer bars, the flow channels may be constructed of a laminate of one or more polymeric materials (column 8, lines 45 – 60). Any resulting combination of laminates, again, ensures that the resin or thermoplastic is prevented from premature solidification.

Thus, because both Hendry and Ouellette teach the use of injection molding apparatus and the importance of insulating both the mold(s) and the manifolds, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Hendry such that the manifold or mold passage is coated with the same flow accelerating material means for the purpose of ensuring that

ensuring that the resin or thermoplastic does not prematurely solidify while in residence in the manifold.

Claims 1 – 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka, et al. (U.S. 5,362,226) in view of Ouellette. Kataoka, et al. teach an injection mold comprising: a fixed mold having a passage for injecting a fluid therethrough and an internal space (figure 1; column 2, lines 55 – 60); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (figure 1; column 2, lines 55 – 60); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for increasing insulation of the fluid and reducing a flow resistance between the inner walls and the fluid so as to accelerate flow of the fluid injected into the injection mold (column 1, lines 45 – 55); wherein the same flow accelerating material means is a solid coating material (column 1, lines 50 – 55); wherein the solid coating material is a polymer coating material (column 1, lines 50 – 55).

Kataoka, et al., however, is silent with respect to any teaching of the same flow accelerating material means provided on the inner walls of the passage.

In a method to fabricate articles via injection molding, Ouellette teaches an improved injection molding apparatus with a runnerless manifold. The manifold is constructed of a low thermal conductive material, providing adequate insulation of the resin being injected (column 4, lines 60 – 65), thereby ensuring that the resin remains at

a reasonable uncured molding temperature during one injection molding cycle (column 4, lines 65 – 67). The manifold is comprised of polymer bars (items 116 and 118 – figure 7) which is constructed of a high temperature polymer material having low thermal conductivity, high strength and rigidity (column 7, lines 61 – 65). The use of such material ensures that the resin material will not either cure prematurely or that the thermoplastic will not solidify while in residence in the manifold (column 8, lines 35 – 45). As an alternative embodiment to the polymer bars, the flow channels may be constructed of a laminate of one or more polymeric materials (column 8, lines 45 – 60). Any resulting combination of laminates, again, ensures that the resin or thermoplastic is prevented from premature solidification.

Thus, because both Kataoka, et al. and Ouellette teach the use of injection molding apparatus and the importance of insulating both the mold(s) and the manifolds, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Kataoka, et al. such that the manifold or mold passage is coated with the same flow accelerating material means for the purpose of ensuring that the resin or thermoplastic does not prematurely solidify while in residence in the manifold.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka, et al. in view of Ouellette. Kataoka, et al. teach an injection mold comprising: a fixed mold having a passage for introducing a fluid therethrough and an internal space (figure 1; column 2, lines 55 – 60); a movable mold detachably attached to the fixed mold and

forming a molding space together with the internal space of the fixed mold (figure 1; column 2, lines 55 – 60); and a flow accelerating means provided on an inner wall of the molding space for accelerating flow of the fluid; wherein the flow accelerating means is a solid coating for increasing insulation of the fluid and reducing a flow resistance between the inner wall and the fluid so as to accelerate flow of the fluid and wherein the solid coating material is a solid lubricant (column 1, lines 50 – 55).

Kataoka, et al., however, is silent with respect to any teaching of the same flow accelerating material means provided on the inner walls of the passage.

In a method to fabricate articles via injection molding, Ouellette teaches an improved injection molding apparatus with a runnerless manifold. The manifold is constructed of a low thermal conductive material, providing adequate insulation of the resin being injected (column 4, lines 60 – 65), thereby ensuring that the resin remains at a reasonable uncured molding temperature during one injection molding cycle (column 4, lines 65 – 67). The manifold is comprised of polymer bars (items 116 and 118 – figure 7) which is constructed of a high temperature polymer material having low thermal conductivity, high strength and rigidity (column 7, lines 61 – 65). The use of such material ensures that the resin material will not either cure prematurely or that the thermoplastic will not solidify while in residence in the manifold (column 8, lines 35 – 45). As an alternative embodiment to the polymer bars, the flow channels may be constructed of a laminate of one or more polymeric materials (column 8, lines 45 – 60). Any resulting combination of laminates, again, ensures that the resin or thermoplastic is prevented from premature solidification.

Thus, because both Kataoka, et al. and Ouellette teach the use of injection molding apparatus and the importance of insulating both the mold(s) and the manifolds, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Kataoka, et al. such that the manifold or mold passage is coated with the same flow accelerating material means for the purpose of ensuring that the resin or thermoplastic does not prematurely solidify while in residence in the manifold.

Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka, et al. in view of Ouellette. Kataoka, et al. teach a molding system comprising: a cylinder having an inlet and an outlet; a screw installed inside the cylinder and making a mold material and a mixture including a plastic introduced into the inlet of the cylinder flow toward the outlet; a heater for heating the mold material and mixture introduced in the cylinder (column 12, lines 1 – 15); a fixed mold having a passage for injecting a fluid therethrough and an internal space (column 2, lines 55 – 60); a movable mold detachably attached to the fixed mold and forming a molding space together with the internal space of the fixed mold (column 2, lines 55 – 60); and a same flow accelerating material means provided on the inner walls of both the fixed mold and the movable mold that form the molding space for increasing insulation of the fluid and reducing a flow resistance between the inner walls and the fluid so as to accelerate flow of the fluid injected into the injection mold (column 1, lines 50 – 55); wherein the flow accelerating means is a solid coating material (column 1, lines 50 – 55).

Kataoka, et al., however, is silent with respect to any teaching of the same flow accelerating material means provided on the inner walls of the passage.

In a method to fabricate articles via injection molding, Ouellette teaches an improved injection molding apparatus with a runnerless manifold. The manifold is constructed of a low thermal conductive material, providing adequate insulation of the resin being injected (column 4, lines 60 – 65), thereby ensuring that the resin remains at a reasonable uncured molding temperature during one injection molding cycle (column 4, lines 65 – 67). The manifold is comprised of polymer bars (items 116 and 118 – figure 7) which is constructed of a high temperature polymer material having low thermal conductivity, high strength and rigidity (column 7, lines 61 – 65). The use of such material ensures that the resin material will not either cure prematurely or that the thermoplastic will not solidify while in residence in the manifold (column 8, lines 35 – 45). As an alternative embodiment to the polymer bars, the flow channels may be constructed of a laminate of one or more polymeric materials (column 8, lines 45 – 60). Any resulting combination of laminates, again, ensures that the resin or thermoplastic is prevented from premature solidification.

Thus, because both Kataoka, et al. and Ouellette teach the use of injection molding apparatus and the importance of insulating both the mold(s) and the manifolds, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to modify the apparatus of Kataoka, et al. such that the manifold or mold passage is coated with the same flow accelerating material means for the purpose

of ensuring that the resin or thermoplastic does not prematurely solidify while in residence in the manifold.

Response to Arguments

16. Applicant's arguments, see pages 8 – 9, filed November 7, 2007, with respect to the rejection(s) of claim(s) 1 – 15 and 24 – 26 under 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the references of Bodkins, et al., Yotsutsuji, et al., Hendry, and Kataoka, et al. in view of Ouellette. Applicant amended independent claims 1, 8, 10 and 12 to include the limitation that the same flow accelerating material means is provided on an inner wall passage for injection of the fluid. Examiner agrees that these previously-cited references do not teach any same coating on the manifold or runner passages.

With respect to claims 1 – 15 and 24 – 26, the Examiner has cited the previously-cited references in view of Ouellette. Ouellette teaches a manifold comprised of polymer bars or a laminate or several layers. The bars or laminate serve to insulate the material within the manifold, thereby preventing any premature cooling or solidification of the material while in residence in the manifold. Thus, coating the manifold with any of the materials as identified by Bodkins, et al., Yotsutsuji, et al., Hendry and Kataoka, et al. serves the same purpose as that taught by Ouellette – to insulate and thereby ensure that the material remains in its fluid or molten state while in the manifold.

Similarly, claim 23, previously allowed, includes the limitation that the same flow accelerating material means is provided on an inner wall passage for injection of the fluid. However, based on the newly-amended claims and an updated search, the Examiner has cited the primary reference of Littleton, et al. to reject claim 23. Littleton, et al. teach a rotary injection mold, wherein the mold cavities are coated with a non-stick coating and the nozzle inner passage has a Teflon sheet attached to its outlet facing the mold cavities. This non-stick material is the identical material as that claimed by Applicant, and though Littleton, et al. may not teach the same function as Applicant's, the structural components are identical.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Veronica D. Ewald whose telephone number is 571-272-8519. The examiner can normally be reached on M-F, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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